



BRADDOCK ROAD METRORAIL STATION:
JOINT DEVELOPMENT ANALYSIS



Washington Metropolitan Area Transit Authority

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Prepared by:



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1. Purpose of Study

The purpose of the Braddock Road Metrorail Station Joint Development Analysis is to identify transit needs and demonstrate overall feasibility for transit-oriented development at the Braddock Road Metrorail Station on the Yellow and Blue Lines in Alexandria, VA.

WMATA evaluated potential Braddock Road Metrorail Station improvements envisioned by the city of Alexandria in its 2008 *Braddock Metro Neighborhood Plan* (“the Small Area Plan”), which recommended office development and improved pedestrian and bike access at the station. The analysis focused on WMATA-owned property at the station, and evaluated opportunities for joint development in the context of transit needs and nearby planned redevelopment.

The effort included a detailed assessment of opportunities for joint development at the station, including the following tasks:

- Coordination with the City on development and infrastructure recommendations, and community needs;
- Review of recommendations for land use, and evaluation of available market data;
- Assessment of existing and future transit needs, including WMATA’s needs for bus access;
- Preparation of development parameters guidelines at the station; and
- Evaluation of potential land value.

This report contains the following sections:

- Section 2: Description of Station Site
- Section 3: Neighborhood Context
- Section 4: Station Access and Circulation Needs
- Section 5: Development Parameters and Guidelines
- Section 6: Land Value Evaluation

2. Description of Station Site

The proposed joint development site is located on the east side of the Metrorail Station entrance (Figure 1). It is bounded by the Metrorail Station and CSX railroad to the west, West Street to the east, and Braddock Road to the south. There are three narrow pedestrian entrances to the Braddock Road Metrorail Station site which is bounded by a fence, hedgerow and continuous sidewalk. The site includes a bus loop with Kiss & Ride facilities. The parcel is relatively flat, however the intersection of Braddock Road and West Street is a low point where flooding occurs frequently.

Figure 1: Braddock Road Metrorail Station



Source: GIS, AECOM

The Joint Development Parcel, shown in Figure 2, is approximately 2.1 acres. The parcel is set back 50 feet from Metrorail tracks and accounts for realignment of Braddock Road to the south. A portion of WMATA Property lies within the Braddock Road right-of-way and is denoted in the figure. Refer to Section 5.3 for additional information regarding potential realignment of Braddock Road.

Figure 2: Proposed Joint Development Parcel



Source: GIS, AECOM

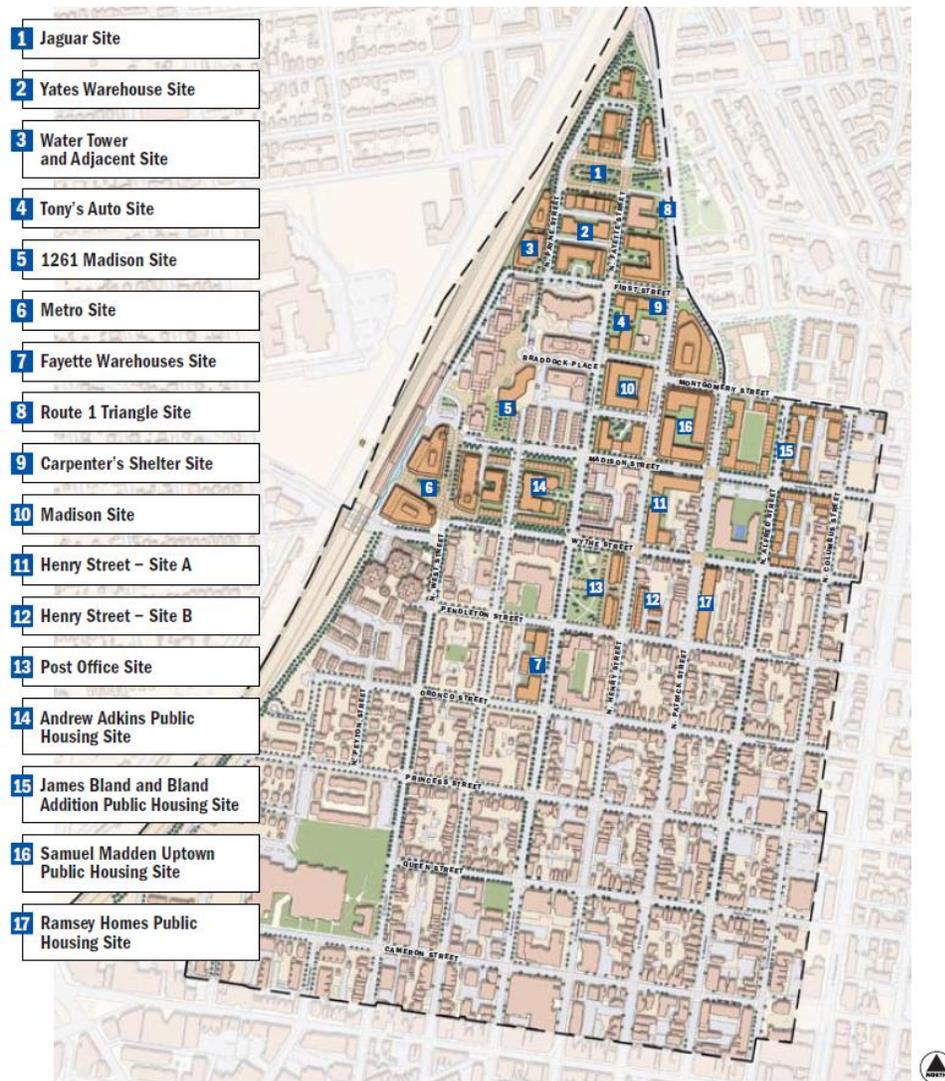
3. Neighborhood Context

The Metrorail Station serves mixed-income, pedestrian-oriented residential communities, and light industrial and commercial office uses in the Braddock Road Metrorail neighborhood. The neighborhoods east of the Braddock Road Metrorail Station include a combination of single-family and multi-family housing with limited neighborhood-serving retail, and the Potomac River is approximately 1-mile east of the station. Neighborhoods west of the station include single-family homes with shops, galleries and restaurants clustered along Mount Vernon Avenue in the Del Ray neighborhood.

3.1 2008 Braddock Metro Neighborhood Plan

As shown in Figure 3, several sites surrounding the joint development parcel are planned for redevelopment.

Figure 3: Development Sites from Small Area Plan

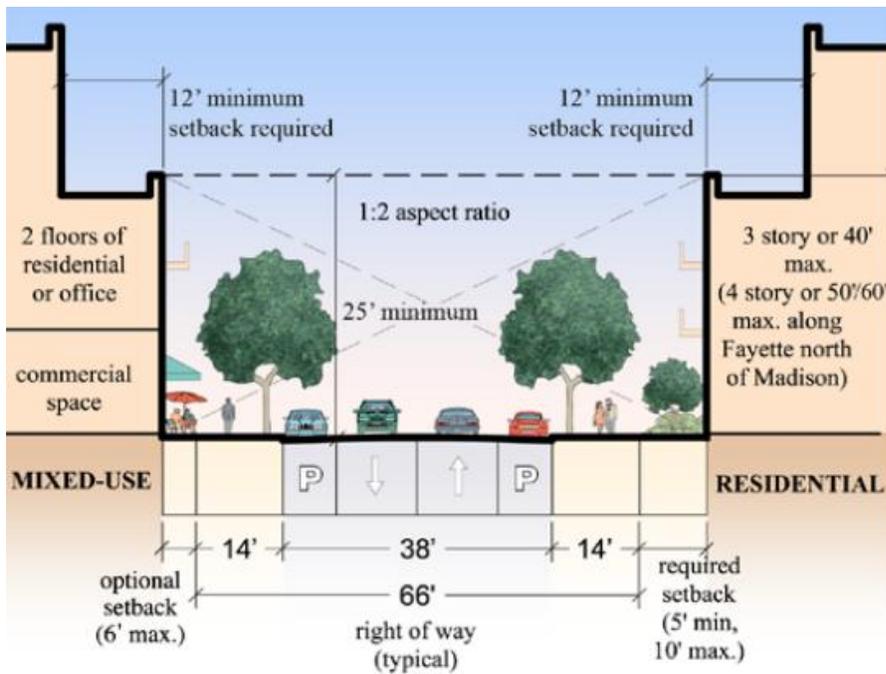


Source: 2008 Small Area Plan

The proposed Joint Development Parcel is currently zoned Utility and Transportation (UT). The 2008 Small Area Plan recommends that the site be rezoned as a Coordinated Development District (CDD). The plan also recommends office or hotel uses with ground floor retail and below grade parking. The current allowable FAR is 0.5 and the proposed Small Area Plan FAR is 3.0 with a maximum height of 77 feet. Figure 4 shows a prototypical cross section from the Small Area Plan indicating the desired building configuration along West Street.

The CDD guidelines for urban design and public amenities are intended to reflect the vision in the Small Area Plan. The Small Area Plan envisions a robust, pedestrian-friendly, intimately scaled mixed-use development at the Metrorail Station that complements existing development around the site. It also identifies a lively urban plaza surrounded by ground-floor retail and other community-focused uses at the station.

Figure 4: Prototypical Site Section from Small Area Plan



Source: 2008 Small Area Plan



3.2 Market Assessment

A high-level market overview was completed in 2014 as part of WMATA's joint development analysis (Appendix A). Population and employment surrounding the Braddock Road Metrorail Station are summarized in Table 1.

Table 1: Braddock Road Metrorail Station Demographics

	Braddock Road Metrorail Station Demographics	
	1 Mile Radius	2 Mile Radius
Population	25,252	70,728
Households (HH)	13,081	33,846
Average persons per HH	1.99	2.01
Average HH Income	\$96,267	\$94,053
Median HH Income	\$81,748	\$81,205
Employment (number of employees)	40,924	76,947

Source: 2010 Census and MWCOC Round 8.2 2013 Cooperative Forecasts

Recently there has been an influx of higher-density, mixed-income residential development with ground floor retail within ½-mile of the Metrorail Station. Immediately north of the Metrorail Station at Braddock Place, a new 10-story apartment building contains 165 residential units. Just two blocks to the east of the Metrorail Station, on the former site of the Belle Pre Bottle Factory, two new apartment buildings surrounding a public plaza have been completed with 360 apartments and 9,700 sf of retail space. Three blocks to the east of the Metrorail Station, the James Bland public housing site is being transformed into mixed-income townhomes and apartment buildings with 240 new residential units. In addition, the Alexandria Redevelopment and Housing Authority (ARHA) has initiated a process to redevelop Andrew Adkins directly adjacent to the Joint Development Parcel.

Beyond the immediate station area, there is currently a deep pipeline of development projects, concentrated in several large development areas: Potomac Yard, Eisenhower/Carlyle, Landmark/Van Dorn, and Beauregard. WMATA's market overview included the following key findings for joint development at the Braddock Road Metrorail Station:

- Office: The area around the Braddock Road Metrorail Station has a lower vacancy rate (1.8%) and limited office space compared to nearby Metro station areas. And, there is over 1 million sf of office space planned in the City to meet immediate citywide needs.
- Residential: The area around the Braddock Road Metrorail Station has increased its share of population, households, and housing units compared to the City as a whole.
- Retail: The market for retail is limited at the site; several grocery stores have been constructed, including a Giant at Potomac Yard and a Harris Teeter in Old Town. Based on market demand it is recommended to focus on smaller, development-supporting space.

3.3 Stormwater Assessment

A stormwater assessment was completed as part of WMATA's joint development analysis (Appendix B) to evaluate joint development stormwater needs. The current land cover is shown in Figure 5 and will be largely replaced with joint development. The new Virginia stormwater management (SWM) regulations require development projects to provide low impact development (LID) SWM facilities on sites when possible. For an urban site like the Braddock Road Metrorail Station, permeable pavement and green roofs are the most viable LID techniques.

Water will also need to be treated on-site and detained on-site in an underground vault. WMATA evaluated storage volumes (Appendix B) needed to detain stormwater for joint development concepts.

The City plans to undertake a detailed study to evaluate alternatives to alleviate periodic flooding at the intersection of Braddock Road and West Street.

Figure 5: Existing Condition showing Land Cover



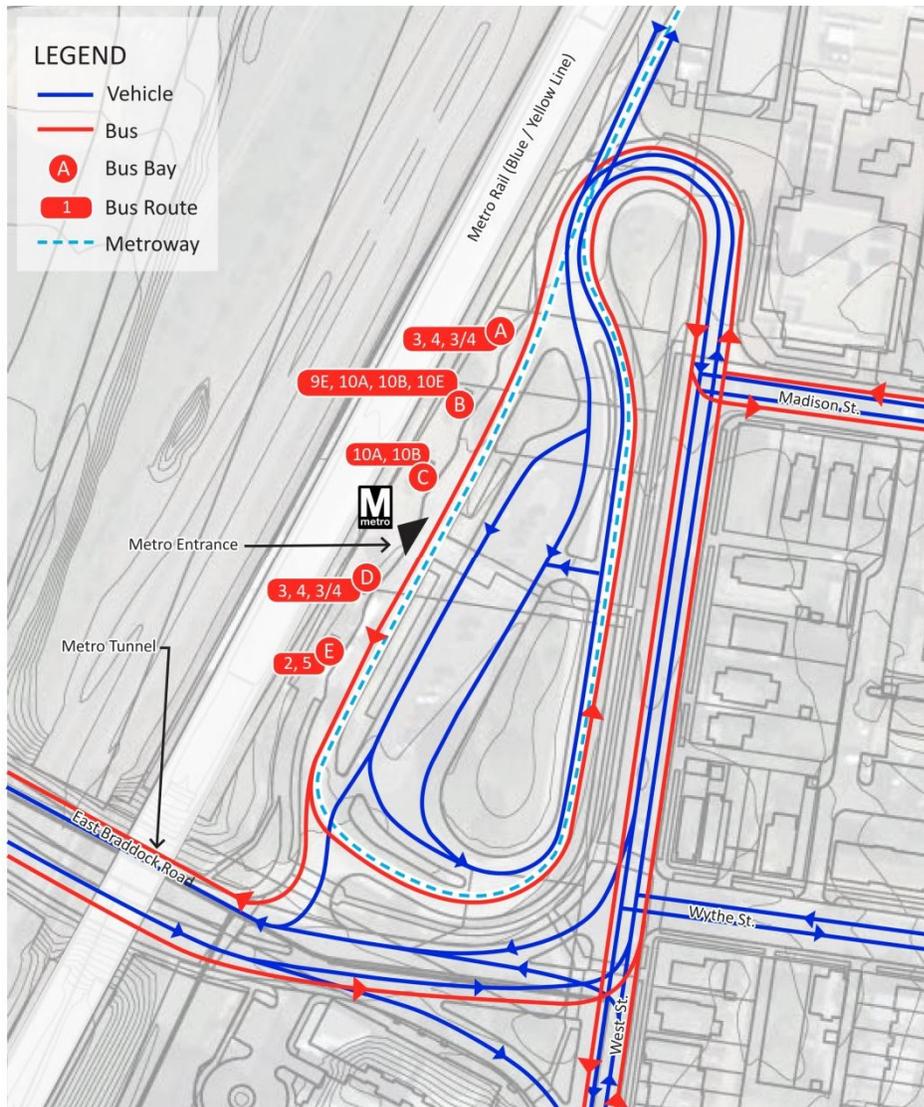
4. Station Access and Circulation Needs

WMATA identified a set of access and circulation needs at the Braddock Road Metrorail Station that are necessary to support current conditions and future improvements.

4.1 Transit

The Braddock Road Metrorail Station provides access to high-quality transit options that serve the City and the region. There is a shared entrance and exit for buses and vehicles at the north side of the parcel at West Street. Kiss & Ride facilities include eight short-term metered parking spaces, four taxi spaces, four Zipcar parking spaces, and one accessible parking space. The Braddock Road Metrorail Station has five standard bus bays serving eight routes for Metrobus and Alexandria Transit DASH: 10A, 10B, 10E, 10S (formerly 9E), AT2, AT3, AT4, and AT5 (Figure 6).

Figure 6: Existing Bus and Vehicular Circulation



Source: AECOM

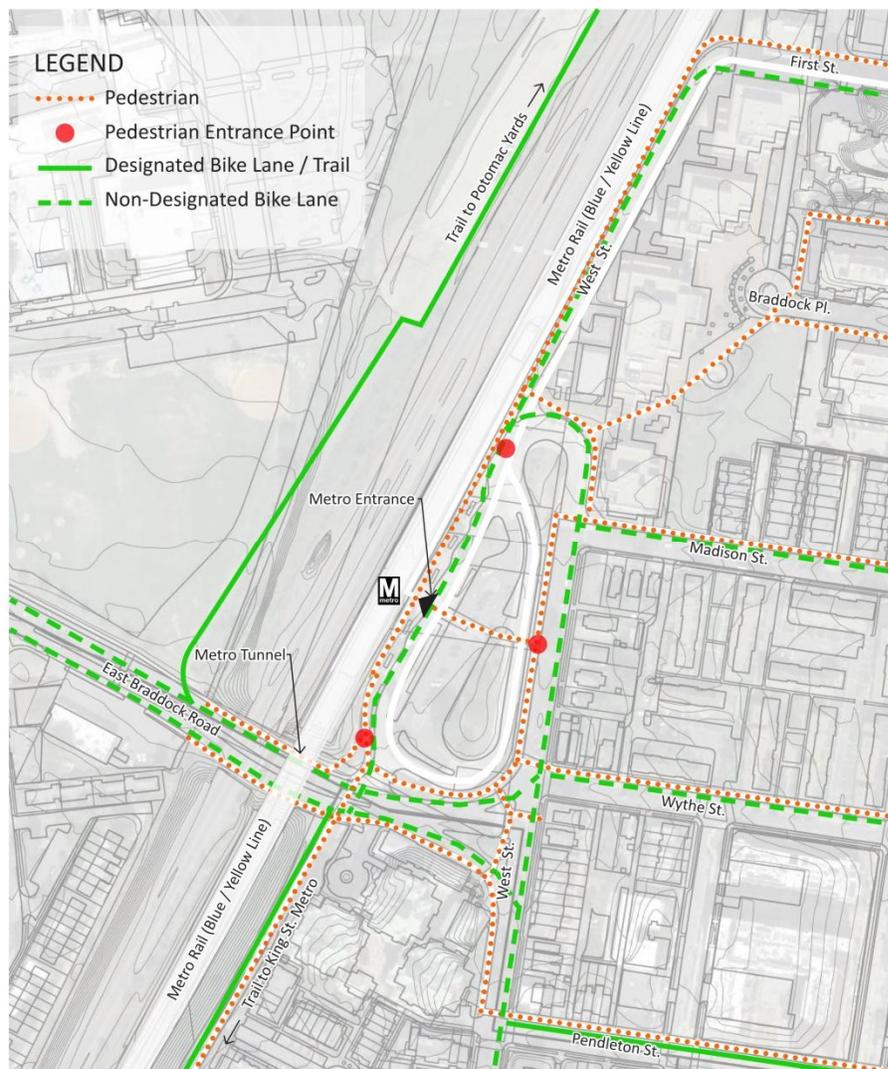
A new Bus Rapid Transit corridor (Metroway) recently opened to provide high-quality transit services in the five-mile corridor between the Braddock Road Metrorail Station and Pentagon City in Arlington County. Metroway buses currently access the Braddock Road Metrorail Station from the north, merging into the bus loop and circulating northbound.

A transit access and circulation analysis was completed in 2014 as part of WMATA's joint development analysis (Appendix C). To accommodate bus access, additional bus bays are needed. Two-way bus circulation is needed if the bus loop is replaced with joint development.

4.2 Pedestrian and Bicycle

Pedestrian and bicycle circulation is shown in Figure 7. Common bicycle routes to the Metrorail Station are from Wythe Street and Madison Street to the east, and from Braddock Road to the west. There is also a multi-use trail from King Street Metrorail Station and a multi-use trail on the west side of the Metro and CSX rail. At the Braddock Road Metrorail Station, there are 46 bicycle racks and 12 bicycle lockers. A Capital Bikeshare station, with a capacity of 19 bicycles, is located at the northeast corner of the Metrorail Station.

Figure 7: Existing Pedestrian and Bike Access



Source: AECOM



As identified by the community and in previous planning efforts, pedestrian and bike access should be maintained and enhanced with development of the Joint Development Parcel. The City is also envisioning realignment of Braddock Road to improve the quality of the pedestrian environment.

5. Development Parameters and Guidelines

Through coordination with the City and community, and as part of WMATA's joint development analysis, the following parameters and guidelines were developed. These guidelines would be included as part of a future joint development solicitation. WMATA aspires to create joint development at the Braddock Road Metrorail Station that is:

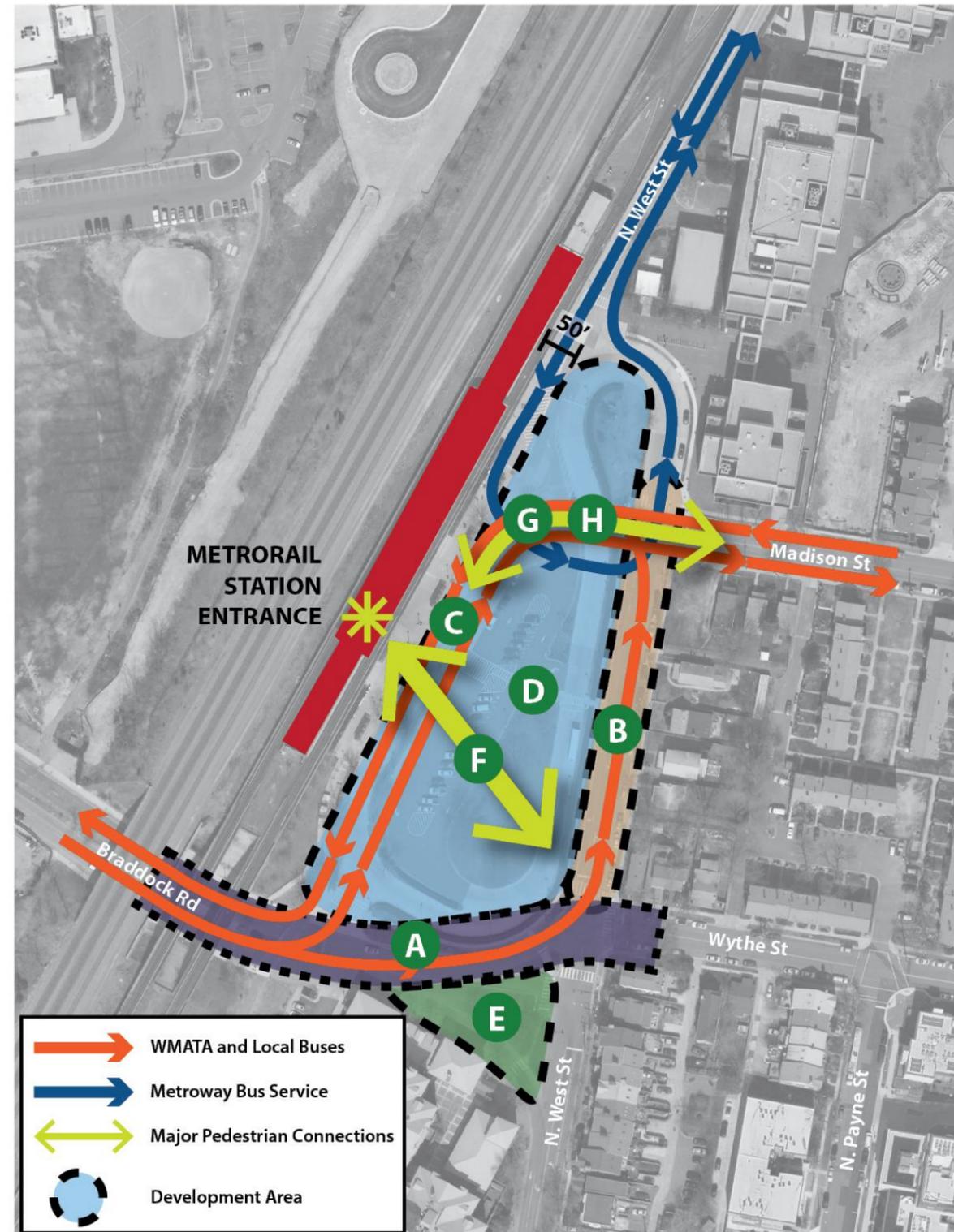
- Consistent with the vision set forth in the 2008 Small Area Plan;
- Responsive to community needs and market trends; and
- Responsive to transit access and circulation needs.

Development at the station should incorporate high quality architecture, compatible urban design, and improved walkability. The character and scale of the development should be compatible with the residential neighborhoods adjacent to the station, and the commercial uses north and south of the station. The centerpiece of the development should include a vibrant neighborhood open space, with neighborhood-serving stores and restaurants. Figure 8 provides a conceptual overview of site organization requirements.

Figure 8: Joint Development Parcel Organization

M metro **Braddock Road Metrorail Station**
Key Principles for Joint Development

- A** Braddock Road realigned.
- B** All Kiss & Ride and shuttles relocated to West Street.
- C** Two-way bus facility.
- D** Development Area, including 15,000 s.f. public open space. Development may extend over busway, but not within 50' of Metrorail track.
- E** 10,000 s.f. off-site public open space.
- F** Strong visual and pedestrian connection between Metrorail station entrance and Wythe Street.
- G** Ample pedestrian connection from Madison Street to Metrorail station entrance.
- H** Strong building form at termination of Madison Street axis.



Source: AECOM

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5.1 Disposition of Existing Facilities

The Joint Development Parcel is presently occupied by a transit bus facility, and a surface Kiss & Ride with short-term parking.

- The bus facilities will remain in operation on site. The developer will be required to incorporate replacement facilities into the joint development project (as described in Section 5.4 below).
- The Kiss & Ride functions (including passenger pickup/dropoff, short-term metered parking, taxis, and car sharing) will be demolished and relocated by the developer to on-street operation, as described in Section 5.4 below.

5.2 Use, Density, and Massing

Land Use and Zoning

As proposed by the City, the site will be zoned Coordinated Development District (CDD), with allowable uses limited to office, hotel, and ground floor retail. Ground-floor retail should be included at the Joint Development Parcel to the extent that it is financially viable.

Floor Area Ratio

Because of its proximity to the Metrorail Station, FAR should be maximized with a target FAR of 3.0. For purposes of calculating FAR, WMATA bus and rail facilities may be excluded from the site area.

Height

The 2008 Small Area Plan limits height to 77 feet. For purposes of joint development, WMATA would consider development with additional height as long as it is compatible with adjacent development. Any proposal for additional height would require an amendment to the existing Small Area Plan, which would require future approval by the Planning Commission, City Council, and community process.

Massing

Buildings fronting on West Street or Braddock Road should be configured with “shoulders” at a maximum height of three stories or 40 feet, with higher floors set back 12 feet from the building front.

The upper levels of the building should extend across the extended centerline of Madison Street, so as to terminate the visual axis along this street with a strong building form. The building massing should also provide appropriate transitions to the existing building to the north and south of the site and the planned development to the east.

Development may project over the WMATA bus facilities, subject to vertical clearance requirements set forth in Section 5.4.

Buildings should be set back a minimum of 50 feet from the centerline of the inbound Metrorail track.

5.3 Vehicular Circulation and Parking

Existing on-site taxi, car-sharing and Kiss & Ride activities will take place on adjoining streets. WMATA's existing on-site automobile parking will not be replaced. The developer will be responsible for designing and constructing the adjoining streets to accommodate taxi, car-sharing and Kiss & Ride activities.

The developer is responsible for reconstructing the on-site bus loop (see Section 5.4).

No off-street public parking is required for the transit station. However, parking should be provided at grade for three Metro service vehicles.

Parking for Development

All parking for the joint development will be located below grade within the Joint Development Parcel. Underground parking will not be permitted under public roadways. All development parking and service access should be accessed directly from public streets, independent of WMATA facilities.

Parking should be provided at ratios that reflect the high-capacity transit location, up to the following maximums:

- Office: 1.66 spaces/1000 sf
- Retail, Restaurant, Personal Services:
 - 2.5 spaces / 1000 sf (personal services)
 - 3.03 to 4.67 spaces / 1000 sf (retail)
- Hotel:
 - 1 space / key (less than 3 stories), 1 space / 2 keys (over 3 stories)
 - 1 space / 4 hotel restaurant seats
 - 1 employee space / 15 guest rooms
- Residential:
 - Visit www.alexandriava.gov/76333 for standards

Roadway Modifications

The selected developer will be required to secure all City approvals and will design and construct any roadway modifications necessitated by the joint development, including but not limited to curb cuts, new or modified signalization, and signage.

The exact location and geometry of joint development curb cuts would be determined in consultation with WMATA during the joint development design process.

Realignment of Braddock Road

It should be assumed that Braddock Road will be realigned to meet Wythe Street, occupying additional WMATA-owned property within the Joint Development Parcel. The developer will be required to design the reconfiguration of Braddock Road. The responsibility for the cost of construction will be determined as part of the City approval process.

5.4 Transit Operations

This section sets forth specific requirements with respect to overall site circulation, including bus operations.

Bus Operations

It is WMATA's expectation that a joint developer will finance, design, and construct an at-grade transit bus facility within the development parcel. The bus facility will be compliant with WMATA's *Design Criteria and Station Site and Access Planning Manual*, and be configured as follows:

- Northbound Busway: To accommodate buses entering the site from Braddock Road, and departing onto West Street at Madison. Provide four standard sawtooth bays.
- Southbound Busway: To accommodate buses entering the site from Madison Street, dwelling, then departing onto Braddock Road. Provide two standard sawtooth bays.
- Metroway Bus Rapid Transit (BRT): To accommodate 60-foot articulated BRT vehicles entering the site from the north on West Street, dwelling, then departing the site to the north via West Street. Provide one sawtooth revenue bay, and one layover bay. The revenue bay should be configured with boarding platforms 14 inches above the roadway. The developer should provide conduit for power and communications connections to ticket vending machines (TVM) and passenger information displays (PIDs).

If the developer proposes to build over the busway, the development should maintain a 16-foot, 9-inch minimum clearance above the roadway.

Pedestrian Access to Metro Facilities

The joint development should provide safe, landscaped pedestrian access connecting the Metrorail Station entrance with the following:

- Intersection of Madison and West Streets;
- Intersection of Wythe Street, Braddock Road and West Streets (may be integrated into the open space described in Section 5.3); and
- Braddock Road, crosswalk connecting to the multi-use trail to King Street Metrorail Station.

Metro station access walkways should be configured to provide clear and intuitive wayfinding to the Metrorail Station entrance with a minimum of signage. The path of travel should be as direct as practical, with a minimum of blind corners and changes of direction.

Metro station access walkways should not be less than 10 feet clear width, and may be co-located with public plazas.

Kiss & Ride

Kiss & Ride functions (including passenger pickup/dropoff, taxis, shuttles and car-sharing), will be relocated to adjacent streets.

Bicycle Facilities for Transit

The developer will provide 50 bicycle racks and 12 bicycle lockers for transit use. Infrastructure for a Capital Bikeshare station, with a capacity of up to 20 bicycles, should also be provided.

5.5 Urban Design

Open Space

The developer should provide well-designed and active open space for the Metrorail site at the corner of Wythe and West Streets. This is intended to establish a gathering space for the community, a vibrant neighborhood square activated by neighborhood-serving stores and restaurants, and “anchored” by the WMATA station entrance.

The developer is encouraged to enliven the open space with items such as café tables, public art, and a water feature. The developer should also provide street furniture for public use including benches, bicycle racks, trash and recycling receptacles.

Provide pedestrian-scale lighting via single (separate) light standards, Dominion Virginia Power colonial style with black finish.

Sidewalks

It is WMATA’s expectation that the developer will finance, design, and construct sidewalks fronting on Braddock Road and West Street with the following characteristics:

- Dimensions: All sidewalks fronting on Braddock Road and West Street should be a minimum of 14 feet from the curb to the face of the building.
 - Where retail, lobbies or other active uses front on the street, increase sidewalk widths up to a maximum of 20 feet, occupying a portion of the development parcel if necessary.
- Materials: sidewalks should be concrete with visual accents formed with joints and/or scoring. Sidewalks will conform to the City’s standards, and include “lamp black” color additive.

Architectural Design

Buildings should be of high-quality design with modern architecture, and incorporate materials that reflect the industrial heritage of the neighborhood.

5.6 Environmental Requirements

Sustainability

The developer should be aware of the City’s Green Building Policy at:

<http://alexandriava.gov/uploadedFiles/planning/info/GreenBuildingPolicyhandout.pdf>

Because the principles of mixed-use, compact, pedestrian-oriented development set forth in these Requirements and Guidelines are inherently sustainable, WMATA will not require a joint developer to obtain environmental certification. However, WMATA will strongly encourage sustainable design and

construction features, and to seek EarthCraft Virginia and/or US Green Building Council (USGBC) LEED certification.

Stormwater Retention/Improvements

As part of the joint development project, the developer will design, finance, build, and maintain a stormwater retention and management system within the Joint Development Parcel with sufficient capacity to accommodate the stormwater flows of the joint development program. The retention facilities should be underground, should be designed in consultation with WMATA, and the City, and must meet all applicable regulatory requirements. See Section 3.3 and Appendix B for more information on WMATA's stormwater analysis.

Developers are encouraged to incorporate additional flood mitigation measures in their site designs.

5.7 Construction Staging and Interim Operations

Design Review

The developer will prepare and submit to WMATA a detailed plan for construction period staging, maintenance of traffic plans, and interim operations for WMATA review and approval in compliance with the WMATA *Adjacent Construction Project Manual* and the following section.

Construction Staging and Interim Operations

Bus, pedestrian and emergency vehicle access to the Metrorail station entrance will be maintained at all times.

Bus facilities will be kept in operation throughout construction. Temporary relocation of bus facilities is necessary; such temporary facilities will comply with WMATA criteria for passenger waiting areas including signage, shelters and amenities.

The busway (whether existing, temporary or permanent) will not be used for contractor parking or access during bus operating hours.

6. Land Value Evaluation

To demonstrate potential development value, WMATA conducted a residual land value (RLV) analyses for two concept plans. The following RLV assumptions formed the baseline for both concept plans:

- Two levels of below-grade parking is assumed for both concepts for a total of 349 spaces. The cost per parking space is estimated at \$30,000 each.
- Bus facility costs are approximately \$3 million for both concepts.
- The analysis assumed full occupancy; it did not reflect whether market conditions support the development program.

Concept 1 – Office

The office scheme achieves a 17% Internal Rate of Return (IRR), which is in the mid-range of an acceptable developer return. With an IRR of 15%, which would be minimally acceptable, a joint developer could support approximately \$7.5 million in any land or demolition costs.

Concept 2 – Hotel and Residential

This concept achieves an IRR of 14.3%, which is below a minimal investment-level return. To achieve a minimally-acceptable investor level return of 15% IRR, a joint developer would require a subsidy of \$1.7 million in addition to the cost of land and demolition.



Appendix A: Market Assessment

Summary

- There is currently a deep pipeline of development projects, concentrated in several large development areas (in order of distance from Braddock Road): Potomac Yard, Eisenhower/Carlyle, Landmark/Van Dorn, and Beauregard.
- Braddock Road is well-positioned, because of Metrorail access and its nearby established residential and commercial areas:
 - Though a station is planned, Potomac Yard does not currently have a Metrorail station. In the nearer term, BRT is planned to connect with Braddock Road station
 - Beauregard does not have Metrorail access
 - Eisenhower/Carlyle and Landmark/Van Dorn developments require additional pedestrian connections to enhance access to existing Metrorail stations, and not all development parcels are within easy access
- Market for retail is more limited at the site than other uses; several grocery stores are planned in the immediate area, including a Giant at Potomac Yard and a Harris Teeter in Old Town.
- Office space in Alexandria in recent years has had negative absorption.
- Hotel lags behind adjacent jurisdictions, most likely due to inclusion of older properties in the submarket.

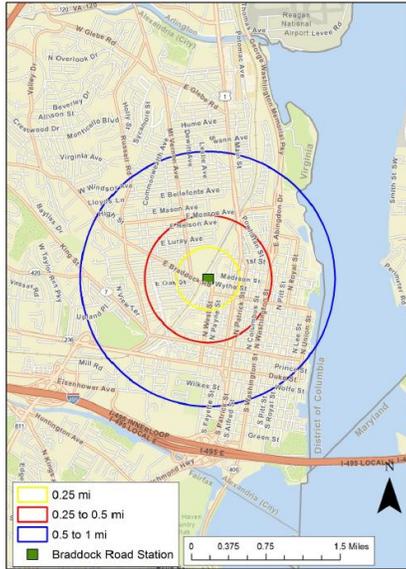
Summary

Development Programming

- Most immediate opportunity: for-sale multifamily residential and/or hotel, with caution about observation of planned developments coming online and differentiation:
 - 200-unit condominium (5% of 5-year total condominium demand, based on historic sales)
 - 100 to 200-room limited service, “business” hotel
 - Service retail
- No significant retail—resident and commuter-serving retail and services only.

Station Area Demographics

	0 – 1/4 miles	1/4-1/2 miles	1/2 -1 mile
Population Summary			
2010	2,045	7,001	18,221
2013	2,115	7,297	19,073
2018	2,284	7,896	20,814
Household Summary			
2010	907	3,356	9,509
2013	941	3,492	9,968
2018	1,020	3,776	10,934
Housing Unit Summary			
2010	958	3,576	10,140
2013	988	3,753	10,527
2018	1,057	4,017	11,421
Owner Occupied Units			
2010	354	1,766	5,528
2013	337	1,721	5,476
2018	377	1,944	6,185
Renter Occupied Units			
2010	553	1,590	3,981
2013	604	1,771	4,492
2018	37	241	487



Demographic Comparison

- Area grew faster than City of Alexandria and Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Statistical Area, with higher household incomes.
- Higher share of renter households in the 1/4-mile radius than the city and MSA and lower vacancy.
- The area around Braddock Road Metro has increased its share of population, households, and housing units in relation to the City.

Area Demographic Comparison

	0 - 0.25 miles	0.25 - 0.5 miles	0.5 - 1 mile	Alexandria	Washington DC MSA
2010-2013 Growth					
Population Growth Rate	1.13%	1.39%	1.53%	1.01%	0.96%
Household Growth Rate	1.23%	1.33%	1.58%	1.04%	0.96%
Housing Unit Growth Rate	1.03%	1.62%	1.26%	1.06%	0.96%

Household Characteristics

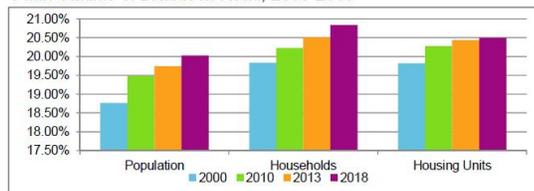
	0 - 0.25 miles	0.25 - 0.5 miles	0.5 - 1 mile	Alexandria	Washington DC MSA
Median Household Income	\$101,823	\$107,811	\$116,707	\$83,774	\$87,704
Household Size	2.19	2.07	1.87	2.03	2.64

2013 Housing Tenure

	0 - 0.25 miles	0.25 - 0.5 miles	0.5 - 1 mile	Alexandria	Washington DC MSA
Owner	34%	46%	52%	38.5%	59.2%
Renter	61%	47%	43%	55.5%	34.5%
Vacant	5%	7%	5%	6.0%	6.3%

Source: ESRI; AECOM, 2014

Growth of Share of City of Alexandria in a 1-Mile Radius of Braddock Road, 2000-2018



Major Development Areas

Much of the new development and proposed development in Alexandria is in one of the major development areas. Potomac Yard is closest to Braddock Road and will most directly impact the site.

- Potomac Yard
 - 295 Acres
 - 4 million square feet office
 - 3,000 residential units
 - 1 million square feet hotel and retail
 - Future Metrorail station and BRT corridor
- Carlyle/Eisenhower
 - 76.5 acre
 - 2.5 million square feet USPTO
 - U.S. Courthouse
- Landmark/Van Dorn
 - 240 Acres
- Beauregard
 - 287 acres
 - BRAC project added 6,400 employees to Mark Center in 2012

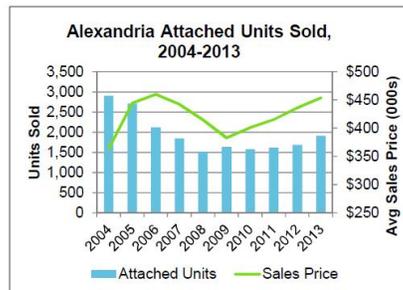
Source: <http://alexecon.org>

Alexandria Home Sales Trends

- Total of 2,230 units sold. Increased 13.8 percent between Dec 2012 and Dec 2013, outpacing neighboring municipalities.
- Average 40 days on market—30 percent decrease over 2012.
- New condo projects sold an average of 3.3 per month.
- Condo prices increased 5.7 percent over 2013.
- In the second half of 2013, 45 units sold in the “Braddock” area (as defined by the Alexandria Economic Development Partnership, bounded by Metrorail line, Powhatan, King, and Washington), 59 in Del Ray, 29 in Rosemont, and 332 in Old Town/Waterfront.
- Recent nearby additions to residential near Braddock Road Metro include Old Town Commons (ongoing, 370 units), The Belle Pre (2013, 360 units), Braddock Metro Place (165 units), and Braddock Gateway (270 units).

2013 City of Alexandria Residential Sales

	Growth in Sales	Average Price
Condo	19%	\$326,612
Detached SF Home	21.4%	\$627,896
Attached SF Home	3.9%	\$763,701





Multifamily Rental Trends

- Across Alexandria, there were 360 units completed in the last 12 months. This is above the 5-year annual average of 237 units.
- There are 1,724 rental units within a quarter-mile of the station. Within a half-mile, there are an additional 390.
- All Class A apartments in the half-mile radius are located within a quarter mile. The majority of all units are located within a quarter-mile of the station.
- Asking rents range from \$1,732 to \$2,426 in the station area. This is higher than Alexandria as a whole.

	Buildings	Units
A		
0.25	4	1,187
0.50	0	0
Total	4	1,187
B		
0.25	1	120
0.50	2	42
Total	3	162
C		
0.25	10	636
0.5	11	129
Total	21	765
All Classes		
0.25	15	1,943
0.50	13	171
Total	28	2,114

	As of June 2014			5-Year Average		
	.25 mi	.5 mi	Alexandria	.25 mi	.5 mi	Alexandria
Vacancy Rate	8.20%	8.00%	4.10%	6.60%	6.00%	4.20%
12 Mo. Absorption	102	102	-106	13	12	16
Rents						
Studio Asking Rent	\$1,732	\$1,732	\$1,155	\$1,621	\$1,621	\$1,090
1 Bed Asking Rent	\$1,975	\$1,952	\$1,408	\$1,798	\$1,747	\$1,402
2 Bed Asking Rent	\$2,426	\$2,350	\$1,766	\$2,260	\$2,121	\$1,753
3+ Bed Asking Rent	n/a	n/a	\$1,886	n/a	n/a	\$1,854
Inventory						
Existing Units	1,724	2,114	40,838	911	1,223	30,339
12 Mo. Const. Starts	0	0	276	209	209	486
Under Construction	0	0	276	382	382	605
12 Mo. Deliveries	360	360	360	162	162	237

Alexandria Residential Pipeline

- As of Q4 2013, Delta Associates estimate an average of 9.5-20.8 months of condominium supply across the region:
 - In Alexandria/Arlington—estimated 20.3-20.9 months
 - In Fairfax/Falls Church—estimated 6.2-55.7 months
- 1,409 units projected to be delivered in 2014.
- 6,505 units in the city's development pipeline.
- There are over 2,600 units in the development pipeline in the west end of Alexandria (including Landmark/Van Dorn and Beauregard areas).

In City's Development Pipeline

	Approved			Concept		Prelim.		Total
	Approved	Site Plan	Review	Review	Review	Total		
Mixed Use	1,655	1,037	488	535	3,715			
Residential	159	1,292	476	742	2,669			
Total	1,935	2,329	964	1,277	6,505			

Source: Summarized by AECOM from data provided by the City of Alexandria Development Division of the Department of Planning and Zoning, as of 3/24/2014.

Planned in Major Development Areas

	Units
Beauregard	6,800
Eisenhower Ave/Carlyle	2,800
Landmark/Van Dorn	3,000
Potomac Yard	6,300
Total	18,700

Note: Major development area numbers include some of those in the City's development pipeline.

Source: Alexandria Economic Development Partnership; Developer web sites.



Office Market

- In the 3rd quarter of 2014, the Alexandria/I-395 market area—which has 832 buildings and 38.8 million sf of space—had a vacancy rate of 21.1 percent for all space. For Class A space—100 buildings and 19.8 million sf—the vacancy rate in this area was 26 percent.
- Overall in the Washington, DC market area, in the third quarter of 2014, had 465.9 million square feet in 9,898 buildings and a vacancy rate of 14.8 percent.
- The Alexandria office market has had negative average annual net absorption over the last five years and high vacancy rates.
- The average annual vacancy rate in 2013 for the city was 16.2%. Much of this can be attributed to BRAC vacancies (although vacant space has since been leased and occupied).
- Major office leases in 2013: National Science Foundation, 667,000 square feet in the Eisenhower/ Carlyle Area, the Institute for Defense Analyses 440,000 square feet of new space in Potomac Yard, City of Alexandria Public Schools at 1340 Braddock Place (84,693 square feet), and SIG Holdings sublease at 11 Canal Center Plaza (35,376 square feet).

Summary Data - 2Q to Date						
Study Area	Number of Buildings	Total RBA /1	Vacancy Rate /2	Average Rental Rate (fs)		
0.25-Mile Alexandria	9	393,604	1.8%	\$27.77		
Alexandria	698	19,135,658	15.1%	\$29.02		

Direct Net Absorption (Sq. Ft.), Annual Totals						
	2008	2009	2010	2011	2013	Avg Annual
0.25-Mile	(1,110)	(49,654)	947	(36,119)	(14,656)	(20,118)
Alexandria	282,579	(327,666)	21,402	(438,509)	72,689	(77,901)

Average Annual Direct Vacancy Rate						
	2008	2009	2010	2011	2013	Avg Annual
0.25-Mile	3.6%	13.1%	15.9%	16.9%	27.0%	15.3%
Alexandria	9.9%	11.5%	12.8%	13.7%	16.2%	12.8%

Average Annual Direct Rent (fs)						
	2008	2009	2010	2011	2013	Avg Annual
0.25-Mile	\$31.79	\$29.36	\$28.14	\$0.00	\$31.85	\$24.23
Alexandria	\$32.90	\$32.17	\$31.58	\$31.28	\$30.68	\$31.72

1/ Rentable Building Area
2/ Does not include Sublet Vacancy
Source: CoStar Property, AECOM, 2013

- There is a general downsizing of office use on a per employee basis, regionally and in Alexandria, as a result of major issues impacting office leasing such as downsizing/rightsizing by tenants, increases in telecommuting, pause/slow-down of federal leasing and the impact that has on government contracting.



Office Market

- Compared performance of office space at Braddock Road Metro to other nearby Metro station areas.
- Supply is limited at present. Majority of space is in two buildings:
 - Braddock Metro Center 1
 - 41,116 square feet
 - 4 stories
 - Class B
 - Built 1985
 - Braddock Metro Center 2
 - 146,520 square feet.
 - 7 stories
 - Class A
 - Built 1985

Metro Station Area Office Performance Statistics

	Braddock 1/4-mile	King Street 1/4-mile	Eisenhower Ave. 1/4-mi	Crystal City 1/4 mi	Pentagon City 1/4-mi
Existing Buildings	7	54	6	15	5
Existing SF	381,104	2,639,964	1,517,293	4,357,633	1,260,541
Gross Rent Per SF	\$27.77	\$35.47	\$41.97	\$40.51	n/a
Vacancy Rate	1.8%	12.7%	32.7%	21.9%	1.4%
Vacant SF	6,965	335,046	495,416	953,297	17,546
Available SF	152,736	460,210	515,518	1,028,217	42,453
Sublet SF	145,771	62,685	2,795	62,824	0
12 Mo. Absorption SF	110,098	-41,808	45,254	27,311	0
Construction Activity					
12 Mo. Const. Starts	0	50,000	720,000	0	0
Under Construction	0	50,000	720,000	0	0
12 Mo. Deliveries	0	0	0	308,898	0
5-year Average Gross Rent/sf	\$30.34	\$36.18	\$36.57	\$41.95	n/a
5-year Average Vacancy Rate	0	0	0	0	0
5-year Average 12-mo absorption	-1,982	-15,154	-31,135	-90,014	-3,509



- Lower total office space
- Lower rent



- Fairly stable tenancy
- Higher occupancy rate
- Higher absorption





Office Pipeline & Employment-Driven Demand

- In next 5 years, Alexandria will add approximately 5,200 new employees in high office-using industries (Source: Woods and Poole Economics).
- This translates to approximately 1.0 million to 1.3 million square feet.
- The pipeline for office appears to largely satisfy the immediate need for office space in Alexandria.

City of Alexandria Approved Office Project Square Footage

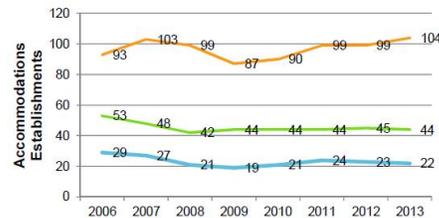
Approved	2,658,378
Approved Site Plan	697,417
Total Square Footage	3,355,795

Source: Summarized by AECOM from data provided by the City of Alexandria Development Division of the Department of Planning and Zoning, as of 3/24/2014.

- Approved office projects:
 - Mark Center V
 - ATA Development Extension Block 20
 - Potomac Yard Landbay G/H
 - Carlyle Plaza I
 - Block 8 Hoffman Town Center
 - Victory Center
 - Some mixed use projects could have office space (many defined as residential/retail)

City of Alexandria Hotel Revenues

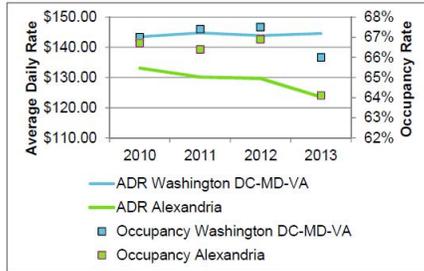
- Properties in the City were reduced by 7 from 2006 to 2013. As of 2013, there were 22 lodging properties in Alexandria.
- Taxable revenue remained relatively steady, though revenue per establishment increased, suggesting that older properties were replaced by newer, more productive ones.



Source: Virginia Department of Taxation via the Center for Economic and Policy Studies at the Weldon Cooper Center for Public Service at the University of Virginia, <http://www.coopercenter.org/econ/taxablesales>.



Hotels



Alexandria Hotel Performance Data, 2013-2014

	Average Room Rate		Occupancy Rate	
	1Q 2013	1Q 2014	1Q 2013	1Q 2014
Washington DC-MD-VA	\$148.11	\$142.37	60%	60%
Arlington	\$154.02	\$145.62	67%	67%
Alexandria	\$125.79	\$119.26	57%	56%
Fairfax/Tysons Corner	\$133.18	\$128.35	57%	57%

Note: Alexandria encompasses portions of Fairfax County. The boundaries are roughly Arlington County to the North, 395/95 to the west and Ft. Belvoir to the south. The area encompasses Ft. Belvoir and Springfield.
Source: STR, Virginia Tourism Corporation

- A year-over-year comparison of average room rates and occupancy rates in Alexandria shows a decline; also the trend across the metro area.
- Average room rates also declined in Alexandria from 2010 to 2013.
- The data also includes inventory in the Fairfax County portion of Alexandria, such as older properties south on Route 1. It is likely that newer, more competitive products are performing better.

Pipeline

- 109-room Hilton Garden Inn near King Street Metro.
- 120-room hotel with restaurant at 220 Union Street.
- 240-room hotel at Carlyle Plaza Two (reallocated FAR—originally planned as office).
- Major planned development areas over 1,500 planned rooms.
- National Science Foundation (Eisenhower Ave) will generate demand for 30,000 visitors on an annual basis.



Alexandria Estimated Hotel Demand

• Total Room Night Demand

Total Visitors ¹	3,300,000
* % Overnight ¹	78%
Overnight Visitors	2,574,000
÷ Visitors Per Party ¹	2.7
Visitor Parties	953,333
* # of Nights per Party ¹	4
Visitor Nights	3,813,333
% Staying in Hotel ²	44%
Total Room Night Demand	1,677,867

¹ TNS Travels America, Alexandria Visitor Profile, Alexandria Convention and Visitors Association

² TNS Travels America, 2013, for Virginia Travel Corporation

• Existing Room Night Supply

Existing Room Supply (per STR)	3,850
Known Planned Rooms	1,969
Total Existing/Planned	5,819
Total Nights at 365 nights/Year and 70% Occupancy	1,486,755

• Net Demand

Total Room Night Demand	1,677,867
Total Existing and Planned Room Night Supply	1,486,755
Net Room Night Demand	191,112
New Room Demand at 365 nights/year	524

Note that there is a slowing of market for meetings/events related to the federal government



Supplemental Major Development Area Information

Braddock Road Metro Station
Market Overview

January 14, 2015

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Potomac Yard in Detail

Landbay F (Potomac Yard Center)

Owned: Lionston
Office – 1,930,000 sf
Residential – 4,495 units
Retail – 930,000 sf
Hotel – 170,000 sf
Status: Proposed

Landbay G (The Exchange)

Main Line Blvd & Maskell St

Blocks C/F

Owned: MRP Residential
Residential – 333 units
Status: Under Construction

Block D

Owned: MRP Residential
Office – 560,506 sf
Build to Suit – Institute for Defense
Status: Under Construction

Block H

Owned: MRP Realty/JBG
Residential – 251 units
Retail – 60,000 sf Giant grocery store
Status: Under Construction

Landbay H/I

Main Line Blvd - Swann Ave
Owned: MGL Ptnrs and Bozzuto
Residential – 250 units
Status: Under Construction

Landbay I

Main Line Blvd & McKenzie
Owned: Pulte
Status: Identified

Landbay J

Jefferson Davis Hwy & Potomac Ave

Majority of Landbay J

Owned: Pulte Homes
Residential – 181 units with a density bonus for 28 units, 8 to be affordable
Retail – 2,436 sf
Status: Under Construction

Block Bound by Potomac Ave and Mainline Ave

Owned: Wood Partners
Residential – 183 units
Status: Identified

Landbay L

Main Line Blvd & E Monroe Ave
Owned: Woodfield Investments
Residential – 276 units
Status: Under Construction

Landbay M:

Main Line Blvd at George Washington
Middle School
Owned: Pulte
Status: Identified

Source: <http://alexecon.org>



Carlyle/Eisenhower in Detail

From Hoffman:
 Block 1: Existing—101 k sf Holiday Inn
 Block 2: Planning—470k sf office; 1,058 pkg sp
 Block 3: Planning—300k sf office; 675 pkg sp
 Block 4: Planning (Q1'16)—218k office; 37k sf retail
 Block 5: Planning (Q3'14)—260 dt; 24k retail
 Block 6: Existing: Hoffman 1 & 2; >1 M sf, 35k retail
 Block 7: Existing—cinemas
 Block 8: Planning (2Q '09)—494k sf class A office; pkg sp 3,275
 Block 9: Planning—170k sf hotel; 2 class A office towers—450k w/ 15k retail; 350k w/ 15k retail

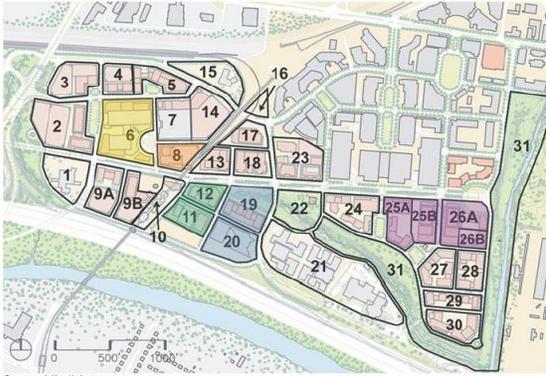
Carlyle Plaza I & II, Blocks 25 & 26
 760 & 765 John Carlyle St
 Owned: Zell Partners
 Office – 755,114 sf
 Residential – 632,056 sf
 Retail – 26,000 sf
 Status: Approved (office only)
 Note: Option to convert 125,000 sf office density to Hotel

Hoffman, Blocks 11 & 12
 East of the Eisenhower Ave Metro Station
 Owned: Hoffman Company
 Residential – 1,200 units
 Retail – 68,000 sf, including a Harris Teeter
 Status: Approved

Hoffman, Block 8
 315 E Stovall St
 Owned: Hoffman Company
 Office – 673,642 sf
 Retail – 22,000 sf
 Status: Approved, future home of [NSF Headquarters](#)

Hoffman Tower One, Block 6
 2461 Eisenhower Avenue
 Owned: Hoffman Company
 Office – 309,000 sf
 Status: Under Construction

Eisenhower Gateway, Block 19 & 20
 Eisenhower Avenue & Mill Road
 Owned: Paradigm and American Trucking Association
 Office – 585,000 sf in two towers
 Residential – 40 stories in two towers
 Status: Approved (residential only)



Source: <http://alexcon.org>



Landmark/Van Dorn in Detail

- | | |
|---|---|
| <p>1. Landmark Mall
 Duke St. / I-395
 Owned: Howard Hughes / Sears / Macy's
 Office - 2.5M sf
 Residential - 1.2M sf
 Retail - 800,000 sf
 Hotel - 500 rooms
 Grocery - 12,000 sf
 Civic Use - 25,000 sf
 Full Service Department Store
 Status: Proposed
 Note: All uses listed represent the minimum required to meet the Small Area Plan</p> | <p>5. The Delaney
 100 S. Pickett St.
 Owner: CIA Pickett St LLC
 Residential - 189 units (23 affordable)
 Retail - 9,000 sf
 Status: Approved</p> |
| <p>2. Choi Site
 Stevenson & S. Walker Sts.
 Owned: Choi Family
 Use:
 Office - 500,000 sf
 Residential - 300,000 sf
 Retail - 10,000 sf
 Status: Identified</p> | <p>6. Van Dorn Plaza
 201 S. Van Dorn St.
 Owner: Edens & Avant
 Residential - 550,000 sf
 Retail - 100,000 sf
 Grocery – 12,000 sf required minimum
 Status: Identified</p> |
| <p>3. Landmark Gateway
 S. Pickett & Van Dorn Sts.
 Owned: Mill Creek
 Residential/AEW
 Residential – 360 units
 Status: Under Construction</p> | <p>7. Millennium/Saul Centers
 101 S. Van Dorn St.
 Owned: B.F. Saul Companies
 Office - 700,000 sf
 Residential - 445,000 sf
 Retail - 125,000 sf
 Status: Identified</p> |
| <p>4. Cameron Park
 S. Pickett St / Edsall Rd.
 Owned: JBG Companies
 Residential - 657,000 sf
 Retail - 12,000 sf</p> | |

Source: <http://alexcon.org>



Beauregard in Detail

Town Center

Reading Ave & N Beauregard
 Owned: JBG Properties
 Office – 405,165 sf
 Residential – 2,123 units
 Retail – 200,000 sf with an additional optional 109,245 sf
 Hotel – 126,000 sf
 Status: Proposed

Garden District

Sanger Ave & N Beauregard
 Owned: JBG Properties
 Residential – 1,008 units
 Retail – 21,355 sf (optional)
 Status: Proposed

Greenway

I-395 & Sanger Ave
 Owned: JBG Properties
 Residential – 1,891 units
 Retail – 13,250 sf
 Status: Proposed

Seminary Overlook

Seminary Rd & N Van Dom St
 Owned: Home Properties
 Residential – 890 units
 Status: Proposed

Southern Towers

Seminary Rd & I-395
 Owned: Southern Towers
 Office – 195,000 sf
 Retail – 25,000 sf with an additional optional 80,000sf
 Hotel – 100,000 sf
 Status: Identified

Upland Park

N Beauregard & Seminary Rd
 Owned: Hekemian
 Office – 78,469 sf
 Residential – 536 units
 Retail – 16,000 sf (optional)
 Hotel – 75,000 sf
 Status: Identified

Adams

1700 – 2000 N Beauregard
 Owned: Duke Realty
 Office – 1.02M sf
 Retail – 15,000 sf
 Hotel – 100,000 sf
 Status: Identified

I-395/ Seminary Rd NE

Owner: WRIT
 1.94 Acres Office
 Status: Proposed



Source: <http://atlexecon.org>

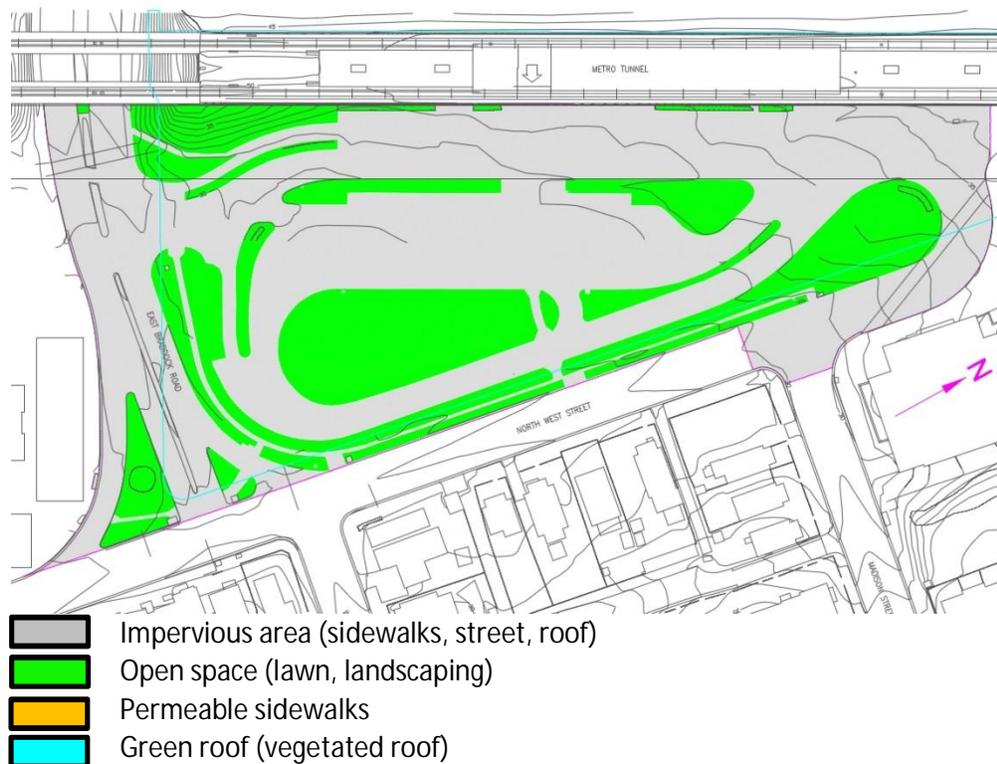
AECOM

Appendix B: Stormwater Assessment

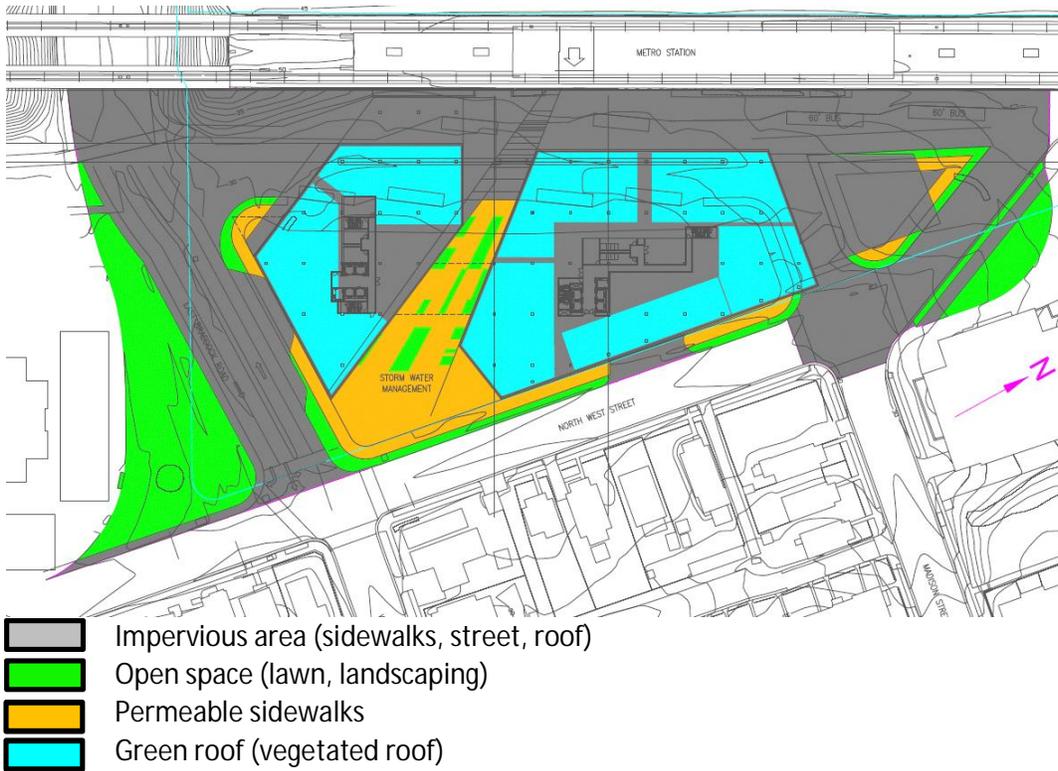
WMATA performed a stormwater analyses for two concept plans. The new Virginia stormwater management (SWM) regulations (Virginia Runoff Reduction Method, VRRM) require development projects to provide low impact development (LID) SWM facilities on sites when possible (LID includes techniques such as rain gardens/bioretention, permeable pavement, and green roofs). For an urban site like the Braddock Road Metrorail Station, permeable pavement and green roofs are the most viable LID techniques.

The following diagrams demonstrate land cover assumed for the existing condition and test-fit concepts:

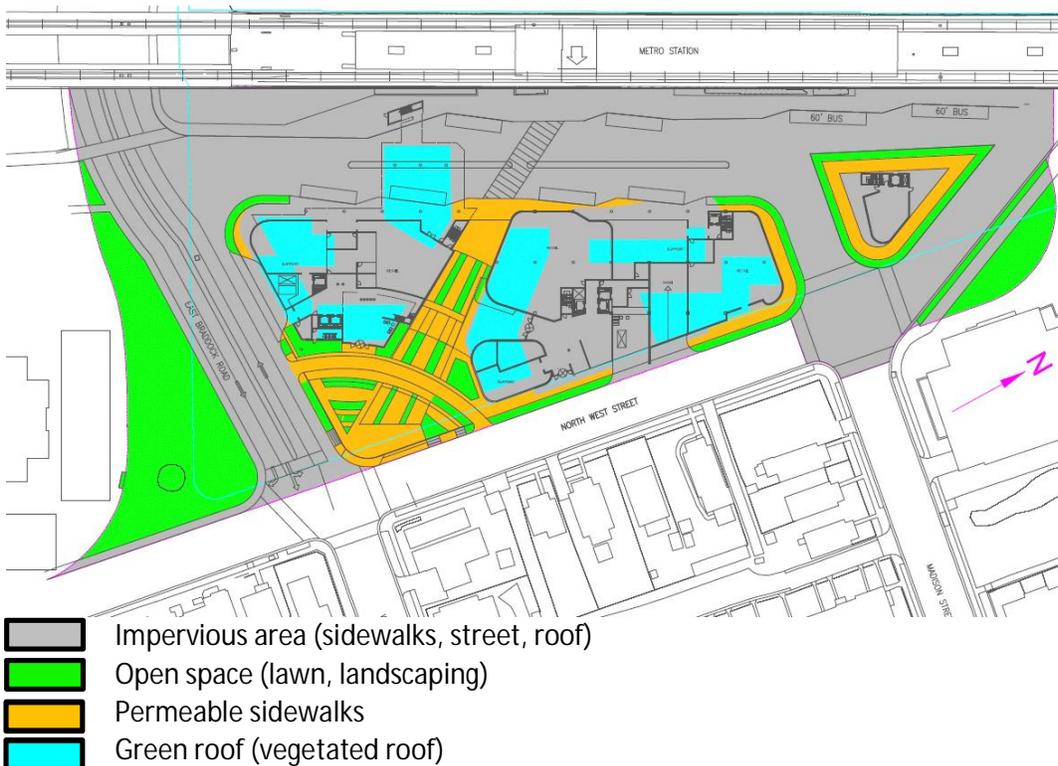
Existing Condition Land Cover



Concept 1 – Office Land Cover



Concept 2 – Hotel and Residential Land Cover





The Virginia SWM regulations require a 20% reduction in the existing annual P (phosphorus) loading for sites over 1 acre. The existing 4.3 acre site is 70% impervious (based on analysis of survey); based on this, calculations performed in VRRM spreadsheets produce a raw existing P loading of 7.30 lb/yr. A credit is given to sites for redevelopment of existing impervious area, i.e. re-paving existing impervious area, rather than paving over unpaved area. The redevelopment credit produces an adjusted “existing conditions” P loading of 6.92 lb/yr for Concept 1, and 6.94 lb/yr for Concept 2 (these figures differ based on the amount of “redevelopment” area able to be credited). Based on their proposed layouts, Concept 1 and Concept 2 produce post-development P loadings of 8.37 and 8.29 lb/yr, respectively.

Stormwater Analysis Table

Parameter	Concept 1	Concept 2
	<i>Office</i>	<i>Hotel and Residential</i>
Pre-Development P load (lb/yr)	6.92	6.94
Post-Development P load (lb/yr)	8.37	8.29
Load Reduction Required (lb/yr)	2.56	2.48
P treated by green roof and permeable pavement (lb/yr)	1.31	1.34
P untreated by green roof and permeable pavement (lb/yr)	1.25	1.14

Source: AECOM, calculations derived from VRRM spreadsheet

Since the treatment provided by the green roof and permeable pavement areas is insufficient to provide the required P load reduction for Concept 1 and Concept 2, an additional manufactured treatment device would be needed to treat the balance. These devices are assigned a phosphorus treatment efficiency by the Virginia Department of Environmental Quality, ranging from 20% to 50%. For joint development at the Braddock Road Metrorail Station, a filter structure accepting runoff from adjoining street pavement would be the best solution to treat the balance. Alternatively, a non-proprietary sand filter structure could be used, at 60-65% treatment efficiency. (Off-site impervious area will need to be treated because treatment of on-site impervious area has already been maximized.)

In addition to the water quality phosphorus treatment required, a water volume treatment is required in order to reduce the quantity of runoff from the site. Generally, two criteria must be met:

- 24-hour extended detention of the runoff from the 1-year 24-hour storm; and
- Release of post-development peak flow from the 10-year 24-hour storm at a rate equal to or below the pre-development flow rate.

Site storage was calculated for the land area owned by WMATA which includes portions of Braddock Road and West Street shown above. For both concept plans, the 1-year volume that must be detained on-site over 24 hours is approximately 6,300 cubic feet. In order to satisfy the 10-year release rate criteria (see second bullet, above), a volume facility of approximately 12,500 cubic feet is required. In order to satisfy this, a volume detention facility of approximately 12,500 cubic feet will be required. Due to limited surface storage area available, volume will need to be detained in an underground vault and



released into the storm drain system. Existing site storm drainage ties into a storm drain system along Braddock Road, draining towards the west, and proposed storm drains will need to connect to the same system.

Note that WMATA did not calculate storage needs to contribute towards alleviating flooding attributed to adjacent streets and properties because data was unavailable for off-site storm drain conveyance conditions.

Appendix C: Transit Assessment

As part of the Braddock Road Metro Station Joint Development process, WMATA analyzed existing operations; determined future service needs; and evaluated one-way and two-way bus operations. Braddock Road Metro Station has five standard bus bays in a one-way layout serving eight routes: 10A, 10B, 10E, 10S (formerly 9E), AT2, AT3, AT4, and AT5 (see Existing Circulation). The site contains an internal bus loop with an entrance/exit for buses at the northern end of the station. Buses also exit onto Braddock Road with a right turn only unsignalized movement. Recent and planned service changes at Braddock Road Metro Station include the following:

- Increase frequency of AT2 Westbound from 30 minute to 20 minute headways (planned);
- New BRT (a.k.a. Metroway) service with 12 minute headways (recent); and
- Relocate 10E and 10S to their former location on Monroe Street (proposed, pending concurrence from City of Alexandria Transportation & Environmental Services).

Six standard bus bays and two articulated layover bays serving seven routes are required to accommodate existing and future needs: 10A, 10B, AT2, AT3, AT4, AT5, and Metroway (see Bus Operations and Bay Assignments below). For the one-way and two-way bus scenarios outlined below, the existing internal bus loop would be displaced by joint development.

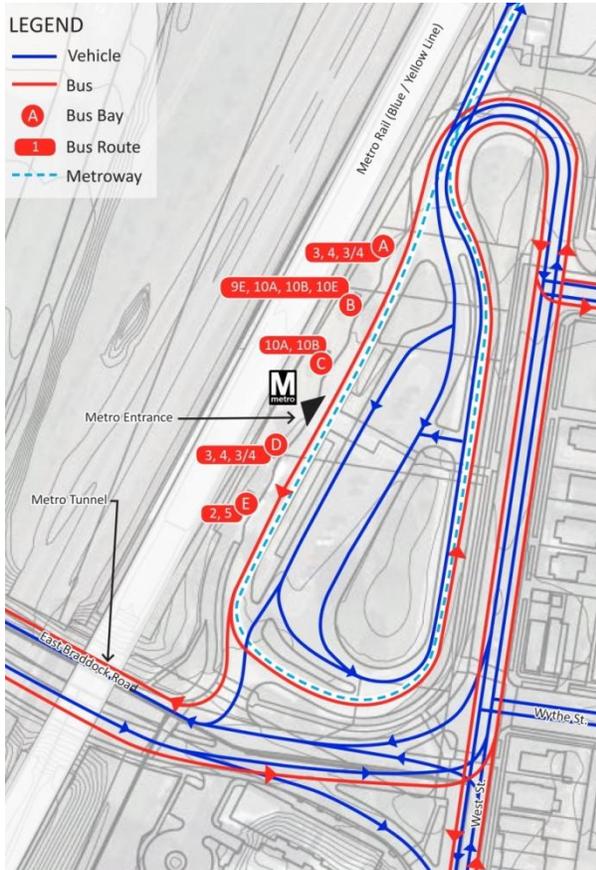
- One-Way Scenario: In order to mirror the one-way bus circulation that exists today, buses would need to exit the station onto Braddock Road through a left-turn movement and recirculate onto West Street. This scenario would necessitate a signalized intersection at the Braddock Road exit to accommodate Metroway, AT2 and AT5 left-turn movements (however the spacing between the existing signal at West Street and the Braddock Road exit would not meet minimum signal spacing requirements).¹ It is unlikely that an unsignalized left-turn movement onto Braddock Road would be permitted because of site distance conflicts at the embankment/overpass.
- Two-Way Scenario (see Future Two-Way Bus Bay Layout below): Buses would have the ability to enter and exit the station from the most direct path and they would not need to recirculate on West Street. Metroway would recirculate at the northern end of the site. The two-way scenario would minimize bus congestion on West Street. The time savings associated with this scenario would be most advantageous for the through routes in which the Braddock Road Station is a mid-point stop (10A, 10B, AT3, AT4), accounting for 22 buses per peak hour.

The two-way scenario is the preferred future option for the station because there are bus travel time savings in a two-way layout and there is a desire from stakeholders to minimize future bus congestion on West Street.

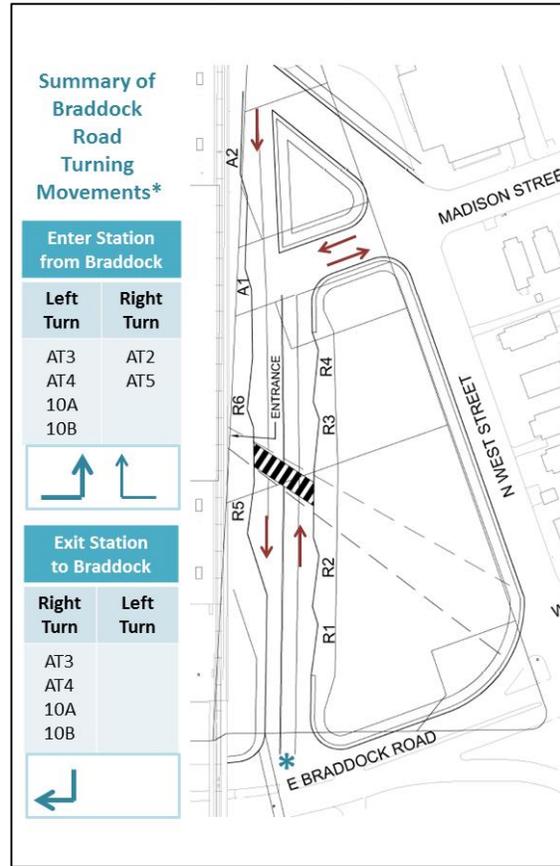
¹ Per VDOT's Road Design Manual, Appendix F, Table 2-2, the minimum spacing required between two signalized intersections on a minor arterial road with a 25 MPH speed limit (such as East Braddock Road) is 880 feet.



Existing Circulation



Future Two-Way Bus Bay Layout



Future Two-Way Bus Operations and Bay Assignments (see corresponding layout above)

EAST SIDE BAYS						
BAY #	Route	Total Peak Hour Buses	Total Bus Minutes (4 Min Dwell)	Layover in Bay (10 Minutes)	Total Time in Bay	Hourly Capacity
R1	AT3 EB	3	12			
	AT4 EB	4	16			
	Total	7	28	0	28	47%
R2	10A SB	2	8			
	10B SB	2	8			
	Total	4	16	0	16	27%
R3	AT2	3	12	30	42	70%
R4	AT5	4	16	40	56	93%
WEST SIDE BAYS						
BAY #	Route	Total Peak Hour Buses	Total Bus Minutes (4 Min Dwell)	Layover in Bay (10 Minutes)	Total Time in Bay	Hourly Capacity
R5	AT3 WB	3	12		12	
	AT4 WB	3	12		12	
	Total	6	24	0	24	40%
R6	10A NB	3	12			
	10B NB	2	8			
	Total	5	20	0	20	33%
A1 & A2	Metroway*	5	10	50	60	100%

* Assumes 2 minute dwell for Metroway due to BRT features (level boarding, off-board fare payment)